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NETWORK INDEPENDENT PARTY ADDRESSING  
USING A UNIQUE IDENTIFIER LINKED TO  
NETWORK SPECIFIC ADDRESSES

BACKGROUND OF THE INVENTION

Technical Field of the Invention

The present invention relates to the provision of communications services and, in particular, to the addressing of a party through use of a network independent address.

Description of Related Art

The manner with which a party is addressed for communications service has historically been network specific. Take, for example, the concept of party addressing in a conventional telephony (voice or fax service) type of communications network. A party in the telephone network is addressed by a set of numeric digits having a certain format

(i.e., the party's dialable phone or fax number). Conversely,  
in a data communications network like the Internet, a party is  
addressed by a collection of numeric digits arranged in a  
certain format (i.e., the party's Internet address). Finally,  
5 for purposes of e-mail communications, a party is addressed by  
a collection of alphanumeric characters having a certain  
format (i.e., the party's e-mail address).

The network specific formats for party addressing in  
different networks often share nothing in common, and thus  
10 each address, even if assigned to the same party, is limited  
for use in contacting that party only within the network for  
which the address is valid. In this regard, conventional  
network address handling procedures do not allow a telephone  
network to route a voice or fax call to a called party based  
15 on a caller specification of the e-mail address for that  
called party. Similarly, the prior art data communications  
network does not possess the ability to route a data message  
to an addressee party based on an addressor specification of  
a telephone number for the addressee party. Because of these  
20 limitations, a party must not only keep separate addresses for  
each network, but he must also make each of those addresses  
known to those persons having a desire to contact him.

There is a significant interest in the communications industry, especially with the proliferation of many different kinds of communications services (voice, data, e-mail, fax, and the like), to move towards an addressing solution where a party would be assigned a unique, world-wide address that is usable for routing communications of any type and in any network. While progress is being made in this area, the legacy solution of having a different party address assigned in each network remains in effect, and an interim solution is needed to bring an improved level of convenience to the issue of party addressing as technology moves towards unique party identifications.

#### SUMMARY OF THE INVENTION

A network independent address is assigned to a party, with that address being linked to a plurality of network specific addresses. Responsive to an origination directed toward the network independent address of the party, that address is used to identify the associated plurality of network specific addresses. A certain one of those identified addresses is then selected based on a specified context of the origination wherein the context refers to the type of

communication being originated and/or the network over which the originated communication is to occur. The origination is then completed to the party using the selected network specific address.

5           More specifically, in the context of an intelligent network solution, a switching node serving a first party that originates a communication toward the network independent address triggers execution of a translation functionality to select the network specific address of a second party. This  
10 selected address is then used by the serving switching node to complete the originated communication to the second party.

          Furthermore, in the context of a serving third generation network solution, a server responds to a first party origination of a communication toward the network independent  
15 address by triggering execution of a translation functionality to select the network specific address of a second party. This selected address is then returned to the originating first party terminal. The terminal then uses the selected address to complete the originated communication to the second  
20 party.

#### BRIEF DESCRIPTION OF THE DRAWINGS

A more complete understanding of the method and apparatus of the present invention may be acquired by reference to the following Detailed Description when taken in conjunction with  
5 the accompanying Drawings wherein:

FIGURE 1 is a block diagram of an intelligent network solution for handling network independent party addressing in a legacy telephone network;

FIGURE 2 is a flow diagram for an intelligent network process for handling an origination with a network independent  
10 address;

FIGURE 3 is a block diagram of a combined second generation (2G) and third generation (3G) wireless network solution for handling network independent party addressing;  
15 and

FIGURE 4 is a flow diagram for a 2G/3G network process for handling an origination with a network independent address.

#### DETAILED DESCRIPTION OF THE DRAWINGS

20 Reference is now made to FIGURE 1 wherein there is shown a block diagram of an intelligent network solution for

handling network independent party addressing. The structure and operation of an intelligent network (IN) is well known to those skilled in the art and thus detailed explanation of IN concepts and operations is outside the context of the present invention and will not be presented. The network includes a switching node 10 (which may comprise a service switching point - SSP) connected by signaling links 12 to a processing node 14 (which may comprise a service control point - SCP). To simplify the drawing figure, only one of many switching nodes 10 included in the network is illustrated, and not all potential interconnections between nodes are illustrated.

A user telecommunications instrument 16 is connected to the switching node 10 by any conventional wireline or wireless interface technology 18. For example, in the context of a wireless intelligent network (WIN) implementation, the wireless interface technology 18 may include a base station (BS - not explicitly illustrated) possessing a signaling and voice/data connection to the switching node and supporting a wireless radio frequency air interface (D-AMPS, GSM, PCS, CDMA, EDGE, and the like) connection to the telecommunications instrument 16. Conversely, in the context of a wireline implementation, the interface technology 18 may comprise

appropriate subscriber line interface cards (not explicitly illustrated).

The switching node 10 is connected, either directly or through other nodes, to a backbone communications network (such as, for example, a public land mobile network (PLMN), a public switched telephone network (PSTN), an internet protocol (IP) network, an asynchronous transfer mode (ATM) network, or the like). Through the backbone communications network, access is provided for communications to other networks. A party has a network specific address in at least one of those other networks as well as a network specific address in the intelligent network itself. For example, in a telephony-type network a party would have a network specific address comprising a telephone number. Still further, and again at the same time, in yet another network (for example, the IP network) that same party may have another, different network specific address comprising an e-mail address. In order to make contact with that party, a user must inconveniently remember (or have access to) each of these network specific addresses, and must further utilize the proper one in connection with the handling of a communication in each network.

The processing node 14 includes a translation functionality 20 that operates to translate from a unique, network independent, address for a certain party to one of the network specific addresses for that certain party. The  
5 unique, network independent, address is supplied by a user in connection with an origination of a communication that is to be directed to that certain party. In this regard, an advantage over prior art addressing schemes is presented in that the user need not know anything about any of the network  
10 specific addresses for that certain party. Thus, the use of the network independent address provides a significant improvement in ease of use and access for the user when originating communications. The address information contained in the origination is delivered to the processing node 14  
15 where the translation functionality 20 identifies one of the network specific addresses for use in further handling the originated communication. The determination of which of the plurality of network specific addresses is to be used (in connection with the supplied network independent address) is  
20 determined by an indication, also provided by the user in the origination, of a context for the communication. The term "context" refers to an identification of the type of



communication being made (for example, telephone call, fax call, e-mail, and the like) and/or the network over which the communication is to occur (PLMN, PSTN, IP, and the like). A more detailed explanation of this process is provided below in connection with the discussion of FIGURE 2.

To support network independent addressing for a party, the user telecommunications instrument 16 must possess the capability to originate communications with the transmission of that network independent address. In many, if not most, implementations, the unique network independent address will have an alphanumeric format and thus the telecommunications instrument 16 and the supporting interface technology 18 must support the sending of such alphanumeric identifiers to the switching node 10 for further handling in connection with communications set-up and delivery. For example, in the context of a wireless intelligent network solution, the mobile station comprising the terminal must be capable of dialing (from the keypad or from an autodialer, contact list or speed-dialing functionality) such a contacted party network independent address and incorporating that address in an appropriate call origination message sent over the air interface. At the same time, the air interface specification

may need to be configured to support such a call origination. In this regard, the length of the network independent address may be restricted by called party parameter size limitations of the implicated air interface specification. A similar  
5 analysis holds true with respect to a wireline implementation in that the operational requirements of the wireline interface (through a subscriber line interface card, for example) may place some restrictions on the nature of the network independent address that is used to identify the contacted  
10 party. Also, it is recognized that the terminal must be capable of dialing (as discussed above with the mobile terminal) that unique network independent address.

Reference is now made to FIGURE 2 wherein there is shown a sequence diagram for an intelligent network process for  
15 handling an origination with a network independent address. The telecommunications instrument 16 of a first party originates 40 a communication dialed toward the network independent address of a second party. This origination in the context of the telephony-based intelligent network of  
20 FIGURE 1 may comprise any standard call origination message modified in accordance with the present invention to specify the second party using its network independent address and to

further specify a context for the originated communication. Again, as discussed above, the "context" of the originated communication refers to an identification of the type of communication being made (for example, telephone call, fax call, e-mail, and the like) and/or the network over which the communication is to occur (PLMN, PSTN, IP, and the like). The origination 40 is processed by the switching node 10 where an intelligent network trigger detection point is implicated 42 by the contents of the origination with respect to the first party. This causes the switching node 10 to make a request 44 of the processing node 14 for translation of the network independent address. The request 44 includes both the network independent address and the specified context for the first party originated communication. In this illustrated intelligent network implementation, the request 44 may, for example, comprise an origination request (ORREQ) message, or similar IN message, as is well known in the art and further modified to include the needed address and context information. At the processing node 14, the network independent address of the second party is used to identify 46 (through, perhaps, a database look-up operation) the corresponding plurality of network specific addresses. The

context is then used to identify 48 (through, perhaps, a filtering operation) which specific one of those plurality of addresses is to be used in connection with the originated communication. The derived (actions 46 and 48) network specific address for the second party is then returned 50 to the switching node 10 and conventional communications origination processing (generally, action 52, and perhaps comprising processing in accordance with the originating-basic call state model - O-BCSM) is performed at the switching node to complete the requested communication. The action 52 taken to complete the communication may require the accessing of, and the routing through, a network other than the intelligent network where the call is originated.

The process of FIGURE 2 may be better understood through the examination of some specific examples. In each of the examples, the following assumptions are made: the second party has a network independent address of secondparty@in.net, a network specific address (dialable number) for voice calls in the intelligent network of 214-555-1234, a network specific address (dialable number) for fax calls in the intelligent network 214-555-4321, and a network specific address (e-mail)

in the IP network for data messaging of  
secondparty@bigcorp.com.

In a first example, the first party desires to contact a  
second party to engage in a voice call. The  
5 telecommunications instrument 16 of the first party originates  
40 a communication dialed toward secondparty@in.net. The use  
of the term "dialed" in this context assumes that the  
instrument is capable of originating a communication through  
the specification of something other than a conventional  
10 dialable telephone number. This origination not only  
specifies the second party using its network independent  
address, but further specifies a context for the originated  
communication which in the present scenario is a voice call.  
At the switching node 10, an intelligent network trigger  
15 detection point is triggered (action 42) causing a translation  
request 44 (including both the network independent address and  
the specified context) to be made of the processing node 14.  
The processing node 14 then identifies 46 the network specific  
addresses of the second party (214-555-1234, 214-555-4321, and  
20 secondparty@bigcorp.com) from the network independent address  
and uses the specified context (voice call) to select (in  
action 48) the network specific address of 214-855-1234 for a

voice call. This derived network specific address for the second party is then returned 50 to the switching node 10. Conventional voice call set-up and delivery actions within the intelligent network (generally, action 52) are then performed  
5 by the switching node to complete the requested communication for a voice call.

In a second example, the first party desires to contact a second party to engage in a fax call. The telecommunications instrument 16 of the first party originates  
10 40 a communication dialed toward secondparty@in.net. This origination not only specifies the second party using its network independent address, but further specifies a context for the originated communication which in the present scenario is a fax call. At the switching node 10, an intelligent  
15 network trigger detection point is triggered (action 42) causing a translation request 44 (including both the network independent address and the specified context) to be made of the processing node 14. The processing node 14 then identifies 46 the network specific addresses of the second  
20 party (214-555-1234, 214-555-4321, and secondparty@bigcorp.com) from the network independent address and uses the specified context (fax call) to select (in action

48) the network specific address of 214-855-4321 for a fax call. This derived network specific address for the second party is then returned 50 to the switching node 10. Conventional fax call set-up and delivery actions within the  
5 intelligent network (generally, action 52) are then performed by the switching node to complete the requested communication for a fax call.

Lastly, in a third example, the first party desires to contact a second party to engage in an e-mail communication.  
10 The telecommunications instrument 16 of the first party originates 40 a communication dialed (i.e., addressed) toward secondparty@in.net. This origination not only specifies the second party using its network independent address, but further specifies a context for the originated communication  
15 which in the present scenario is an e-mail. Given that the request is for an e-mail, the origination further includes the actual e-mail message content itself. At the switching node 10, an intelligent network trigger detection point is triggered (action 42) causing a translation request 44  
20 (including both the network independent address and the specified context) to be made of the processing node 14. The processing node 14 then identifies 46 the network specific

addresses of the second party (214-555-1234, 214-555-4321, and  
secondparty@bigcorp.com) from the network independent address  
and uses the specified context (e-mail call) to select (in  
action 48) the network specific address of  
5 secondparty@bigcorp.com for the e-mail. This derived network  
specific address for the second party is then returned 50 to  
the switching node 10. Conventional e-mail set-up and  
delivery actions within the intelligent network and reaching  
to the internet protocol network (generally, action 52) are  
10 then performed at the switching node to complete the requested  
communication for an e-mail delivery.

In a preferred embodiment, the network independent  
address is assigned to the second party by the service  
provider for the supporting network. In the specific example  
15 FIGURES 1 and 2, this would comprise the service provider for  
the intelligent network (and hence the top and second level  
domains of "net" and "in," respectively, in the network  
independent address). Although the preferred embodiment  
utilizes an e-mail address format for the network independent  
20 address, it should be understood that any suitable address  
format may be used.



It has also been mentioned that a preference exists for the use of a network independent address. The use of the phrase "network independent" need not necessarily imply that the address is not a routable address in any network. It is possible, especially if the address has an e-mail type format, for the network independent address to be a routable e-mail address. The restriction to "network independent" when referring to the second party address is rather to be construed as an identification of an address for a party that is associated (or linked) with a plurality of network specific addresses. A possibility exists for that network independent address to also be capable of being routable in one specific network, with the linked network specific addresses being used to route in connection with other networks.

Handling in the manner described above in connection with FIGURES 1 and 2 ensures that routing continues to be implemented in accordance with network specific addresses. This solution is therefore completely compatible with legacy networks. To handle routing in any other fashion would implicate unwanted and significant changes in the routing analysis operations performed by legacy networks. An advantage provided by the solution is that it preserves legacy

routing while simultaneously introducing parties to the concept of unique and network independent party addressing that may be common-place in future network implementations.

Reference is now made to FIGURE 3 wherein there is shown  
5 a block diagram of a combined second generation (2G) and third generation (3G) wireless network solution for handling network independent party addressing. It is recognized that during the changeover from 2G to 3G networking, coexistence of both networks will exist for a time. Generally speaking, the 2G  
10 networks comprise those networks operating in accordance with circuit switched technologies while the 3G networks comprise those networks operating in accordance with packet switched technologies. Given the current state of packet switched technologies, voice calls are preferably established over the  
15 2G network, while all other data related communications (e-mail, fax, file transfer, and the like) are established over the 3G network. The structure and operation of 2G (for example, D-AMPS, GSM, PCS and the like) wireless telecommunications networks and 3G (for example, EDGE, GPRS,  
20 W-CDMA, CDMA2000, and the like) wireless telecommunications networks is well known to those skilled in the art and thus detailed explanation of networking concepts and operations is

outside the context of the present invention and will not be presented.

A party has a network specific address in both the 2G and the 3G network as well as, perhaps, in other networks. For example, in the 2G network the party has a network specific address comprising a telephone number. At the same time, in the 3G network, that same party may have another, different network specific address comprising an e-mail address. In order to make contact with that party, a user must inconveniently remember (or have access to) each of these network specific addresses, and must further utilize the proper one in connection with the handling of a communication over each network.

A user telecommunications instrument 100 (typically comprising a Class B terminal) is connected to the 2G/3G networks by any conventional 2G/3G wireless interface technology 102. For example, in the context of the 2G network implementation, the wireless interface technology 102 may include a base station (BS - not explicitly shown) possessing a signaling and voice/data connection to the network and supporting a wireless radio frequency air interface (D-AMPS, GSM, PCS, CDMA, and the like) 102 connection to the

telecommunications instrument. Similarly, in the context of the 3G network implementation, the interface technology 102 may comprise a base station (BS - not explicitly shown) possessing a signaling and voice/data connection to the network and supporting a wireless radio frequency air interface (GPRS, W-CDMA, CDMA2000, and the like) connection to the telecommunications instrument 100.

The 3G network further includes a server 104 having a translation functionality 106 that operates to translate from a unique, network independent, address for a certain party to one of the network specific addresses for that certain party. The unique, network independent, address is supplied by a user in connection with an origination of a communication directed to that certain party. In this regard, the user need not know anything about any of the network specific addresses for that certain party. The use of the network independent address thus provides a significant improvement in ease of use and access for the user when originating communications. The address information contained in the origination is delivered over a 3G packet session to the server 104 where the translation functionality 106 identifies one of the network specific addresses for use in further handling the originated

communication. The determination of which of the plurality of network specific addresses is to be used is driven by an indication, also provided by the user in the origination, of a context for the communication. The term "context" refers to the type of communication being made (for example, telephone call, fax call, e-mail, and the like) and/or the network over which the communication is to occur (2G, 3G, and the like). A more detailed explanation of this process is provided below in connection with the discussion of FIGURE 4.

To support network independent addressing for a party, the user telecommunications instrument 100 must possess the capability to originate communications with the transmission of that network independent address. In many, if not most, implementations, the network independent address will have an alphanumeric format and thus the telecommunications instrument 100 and the supporting interface technology 102 must support the sending of such alphanumeric identifiers to the 2G/3G network for further handling. For example, the preferred Class B terminal must be capable of dialing (from the keypad or from an autodialer, contact list or speed-dialing functionality) such a contacted party network independent address and incorporating that address in an appropriate call

origination message sent over the air interface. At the same time, the air interface specification must be configured to support such a call origination. In this regard, the length of the network independent address may be restricted by called  
5 party parameter size limitations of the implicated air interface specification. Also, it is recognized that the terminal must be capable of dialing (as discussed above) that network independent address.

Reference is now additionally made to FIGURE 4 wherein  
10 there is shown a flow diagram for a 2G/3G network process for handling an origination with a network independent address. The telecommunications instrument 100 of a first party is camped on to the packet control channel of the 3G network. An origination 110 of a communication dialed toward the network  
15 independent address of a second party is then made. A packet session 112 is established between the telecommunications instrument 100 and the 3G network to support communication of the unique identifier and context to the server 104. Again, as discussed above, the "context" of the origination 110  
20 refers to the type of communication being made (for example, telephone call, fax call, e-mail, and the like) and/or the network over which the communication is to occur (2G, 3G, and

the like). Using the translation functionality 106, the server 104 uses the network independent address of the second party to identify 114 (perhaps through a look-up operation) the corresponding plurality of network specific addresses.

5 The context is then used to identify 116 (perhaps through a filtering operation) which specific one of those plurality of addresses is to be used in connection with the originated communication. The derived (actions 114 and 116) network specific address for the second party is then returned 118 to

10 the telecommunications instrument 100 over the packet session 112. An application 120 in the telecommunications instrument 100 is then executed 122 to utilize the received network specific address to complete 124 a communication with the second party. The action 124 taken to complete the

15 communication may require the accessing and routing through a network other than the 3G network (for example, the 2G network).

The process of FIGURE 4 may be better understood through the examination of some specific examples. In each of the

20 examples, the following assumptions are made: the second party has a network independent address of secondparty@servprov.net, a network specific address (dialable number) for voice calls

in the 2G network of 214-555-1234, and a network specific address (e-mail) accessed through the 3G network (and perhaps over the internet protocol network) for data messaging of secondparty@bigcorp.com.

5           In a first example, the first party desires to contact a second party to engage in a voice call. The telecommunications instrument 100 of the first party is camped on to the 3G network packet control channel. A call origination 110 dialed toward secondparty@servprov.net is made  
10 over the packet control channel with the 3G network and a packet session 112 is established. The use of the term "dialed" in this context includes a Class B terminal capability of originating a communication through the specification of something other than a conventional dialable  
15 telephone number. This origination not only specifies the second party using its network independent address, but further specifies a context for the originated communication which in the present scenario is a voice call. At the server 104, the translation functionality 106 then identifies 114 the  
20 network specific addresses of the second party (214-555-1234, and secondparty@bigcorp.com) from the network independent address and uses the specified context (voice call) to select



(in action 116) the network specific address of 214-855-1234. This derived network specific address for the second party is then returned 118 to the telecommunications instrument 100. Conventional voice call set-up and delivery actions within the  
5 2G network (generally, action 124) are then performed to complete the requested communication for a voice call.

In a second example, the first party desires to contact a second party to engage in an e-mail communication. The telecommunications instrument 100 of the first party is camped  
10 on to the 3G network packet control channel. A call origination 110 dialed toward secondparty@servprov.net is made over the packet control channel within the 3G network and a packet session 112 is established. This origination not only specifies the second party using its network independent  
15 address, but further specifies a context for the originated communication which in the present scenario is a 3G network supported e-mail communication. At the server 104, the translation functionality 106 then identifies 114 the network specific addresses of the second party (214-555-1234, and  
20 secondparty@bigcorp.com) from the network independent address and uses the specified context (e-mail communication) to select (in action 116) the network specific address of

secondparty@bigcorp.com. This derived network specific address for the second party is then returned 118 to the telecommunications instrument 100. Conventional e-mail set-up and delivery actions through the 3G network (generally, action  
5 124, and perhaps through the internet protocol network) are then performed to complete the requested communication for an e-mail communication.

In a preferred embodiment, the network independent address is assigned to the second party by the service  
10 provider for the supporting 2G/3G networks. In the specific example FIGURES 3 and 4, this would comprise the service provider for the 2G/3G network (and hence the top and second level domains of "net" and "servprov," respectively, in the network independent address). Although the preferred  
15 embodiment utilizes an e-mail address format for the network independent address, it should be understood that any suitable address format may be used.

Handling in the manner described above in connection with FIGURES 3 and 4 ensures that routing continues to be  
20 implemented in accordance with network specific addresses. This solution is therefore completely compatible with legacy 2G networks. To handle routing in any other fashion would

implicate unwanted but significant changes in the routing analysis operations performed by legacy networks. An advantage provided by the solution is that it preserves legacy routing while simultaneously introducing parties to the concept of unique and network independent party addressing that may be common-place in future network implementations (like 3G networks).

Although preferred embodiments of the method and apparatus of the present invention have been illustrated in the accompanying Drawings and described in the foregoing Detailed Description, it will be understood that the invention is not limited to the embodiments disclosed, but is capable of numerous rearrangements, modifications and substitutions without departing from the spirit of the invention as set forth and defined by the following claims.